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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/739,618	12/18/2000	John H. Howard	5181-59100	3682

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EXAMINER

KIANERSI, MITRA

ART UNIT	PAPER NUMBER
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2143

DATE MAILED: 05/10/2004

10

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/739,618

Applicant(s)

HOWARD, JOHN H.

Examiner

mitra kianersi

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 03 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 December 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-35 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-35 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 December 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date: 5, 7, 8, 9
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date: _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

Claims 1-35 have been examined.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language:

Claims 1-35 are rejected under 35 U.S.C. 102(e) as being anticipated by Moore (US Patent No. 6,594,676).

1. As per claim 1, a storage comprising: a non-volatile memory storing a first inode corresponding to a first file; (the memory devices 18 are depicted as including a non-volatile storage device 20 such as a hard disk drive, CD ROM drive, tape drive, or any other suitable storage device, col 6, lines 39-41) and a block manager configured to copy said first inode to a second inode, wherein said block manager is configured to change said second inode in response to updates to said first file, and wherein said block manager is configured to atomically update said first file in response to a commit of said first file by writing said second inode to said non-volatile memory. (One method for implementing database updates and commit point processing is for the database manager to maintain the database changes in storage and not apply the changes to the databases until the commit point is reached. A copy of the database data that is changed is written to the log as the update is created. When the commit

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point is reached, and everything went as expected, the updates are written to the databases, col 2, lines 52-60).

2. As per claims 2 and 22, the storage wherein said non-volatile memory stores a journal comprising a list of committed inodes, and wherein said block manager is configured to record said second inode in said journal. (a copy of the database data that is changed is written to the log as the update is created. When the commit point is reached, and everything went as expected, the updates are written to the databases, col 2, lines 55-57).

3. As per claims 3 and 23, the storage wherein said commit of said first file comprises a commit commands received from an external source which updates said first file. (When the commit point is reached, and everything went as expected, the updates are written to the databases, col 2, lines 57-59).

4. As per claim 4, 9, 19 and 24, the storage wherein said commit command comprises a file close command. (The step is inherent, because among the library routines may be routines to open a file, read a file, write a file and close a file).

5. As per claim 5, 10, 20 and 25, the storage wherein said commit command comprises an fsync command. (The step is inherent, because a synchronization command like Unix fsync command may be supported which may commit all prior changes without closing the file).

6. As per claims 6 and 26, the storage wherein said journal further includes a checkpoint record including a description of an inode file, a block allocation bitmap, and an inode allocation bitmap. (each database management system 202 may include a log 204 having log records to track updates to data kept in memory 18 or in a database 206. The log 204 is used for reference to track data changes and other events performed by the corresponding database management system 202, col 7, lines 39-43).

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7. As per claims 7 and 27, the storage wherein the description comprises inodes for each of said inode file, said block allocation bitmap, and said inode allocation bitmap. (the database system 200 further includes one or more databases 206 having one or more database data sets. The databases 206 are designated as DB1 to DBn to illustrate a variance in the number of databases 206 in a system 200, col 7, lines 47-50).

8. As per claim 8, an apparatus comprising: a computing node configured to perform one or more write commands to a file and a commit command committing the one or more write commands to said file; and a storage coupled to receive said one or more write commands and said commit command, wherein said storage is configured to copy one or more blocks of said file to a copied one or more blocks, said one or more blocks updated by said one or more write commands, and wherein said storage is configured to update said copied one or more blocks with write data corresponding to said one or more write commands, and wherein said storage is configured to copy a first inode corresponding to said file to a second inode and to update pointers within said second inode corresponding to said one or more blocks to point to said copied one or more blocks, and wherein said storage is configured to atomically update said file by writing said second inode responsive to said commit command, and wherein said first inode is stored in an inode file, and wherein said inode file is identified by a master inode, and wherein said inode file is atomically updated with said second inode by writing said master inode subsequent to said commit command. (database management systems include a recovery facility to respond to a database failure. Upon database failure, the recovery facility creates a new database and writes the backup copy to the new database. The recovery utility further applies all the updates to the database from when the backup copy was created. Information used to restore the new database from the last state of the backup copy may be taken from the log data sets and recovery control information, col 1, lines 57-65)

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9. As per claims 11 and 28, a method comprising: copying a first inode corresponding to a first file to a second inode; modifying said second inode in response to one or more changes to said first file; and atomically updating said first file by establishing said second inode as the inode for said first file. In order to create the CADS, the change accumulation utility reads log data sets sequentially, that is, one after another. (typically, users organize their multiple databases into change accumulation groups so that the change accumulation utility operates as efficiently as possible. A user can run the change accumulation process against one change accumulation group and use an optional secondary output--the set of log records that were not written to the change accumulation data set--as input to the change accumulation utility for the next change accumulation group to be processed. This can be done for each change accumulation group in which the current change accumulation run uses the secondary output of the previous change accumulation run, col 2, lines 12-29).

10. As per claims 12 and 29, the method wherein said establishing comprises storing said second inode in a journal stored in a nonvolatile memory. (a portion of the non-volatile storage 20 which is used to extend the RAM 24, col 6, lines 47-48).

11. As per claims 13 and 30, the method further comprising writing a master inode corresponding to an inode file including said second inode to a checkpoint record in said journal. the updates are not permanently stored in the database until the updates are physically written on the database. (In general, database activity is based on being able to "commit" updates to a database. A commit point is a point in time where updates become permanent parts of the database, col 2, lines 43-46).

12. As per claims 14 and 31, the method wherein recovering from a system failure comprises: scanning said journal to locate a most recent checkpoint record and zero or more inodes subsequent to said most recent checkpoint record within said journal; copying said master inode from said most recent checkpoint record to a volatile

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memory; and updating an inode file corresponding to said master inode with said one or more inodes subsequent to said most recent checkpoint record. (In recovery, subsequent updates to the database are applied from records on the log data sets. Recovery further requires storage of attributes of the database and the backup. Database management systems often include a data set for control of recovery which comprises several attributes of the database and the backup copy. Database management systems use some form of recovery control information recorded in this data set relating to the database and the backup copy to assist in recovery. Col 1, lines 43-56).

13. As per claims 15 and 32, the method wherein said updating said inode file comprises: copying one or more blocks of said inode file storing said one or more inodes to a copied one or more blocks; (If something goes wrong, such as a write error to the database, and the updates cannot be made, all the updates produced since the last commit point are "aborted." It is as if the updates never happened, col 2, lines 48-51) and updating said master inode in said volatile memory to point to said copied one or more blocks. for implementing database updates and commit point processing is for the database manager to maintain the database changes in storage and not apply the changes to the databases until the commit point is reached, col 2, lines 52-55).

14. Claims 16, 17, 33 and 34; recite the same limitations as claim 11. Therefore, it is analyzed and rejected by the same rationale.

15. As per claims 18 and 35, the method wherein said establishing said second inode is performed in response to a commit command. (a copy of the database data that is changed is written to the log as the update is created. When the commit point is reached, and everything went as expected, the updates are written to the databases, col 2, lines 55-57).

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16. As per claim 21, a storage comprising: a non-volatile memory storing a first inode corresponding to a first version of a file; (the memory devices 18 are depicted as including a non-volatile storage device 20 such as a hard disk drive, CD ROM drive, tape drive, or any other suitable storage device, col 6, lines 39-41) and a block manager configured to copy said first inode to a second inode wherein said block manager is configured to change said second inode in response to updates to the file, and wherein said block manager is configured to atomically update the file, producing a second version of the file, in response to a commit of the file by writing said second inode to said nonvolatile memory. (One method for implementing database updates and commit point processing is for the database manager to maintain the database changes in storage and not apply the changes to the databases until the commit point is reached. A copy of the database data that is changed is written to the log as the update is created. When the commit point is reached, and everything went as expected, the updates are written to the databases. Col 2, lines 52-60).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mitra Kianersi whose telephone number is (703) 305-4650. The examiner can normally be reached on 7:00AM-4:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wiley can be reached on (703) 308-5221. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Mitra Kianersi
April/27/2004


DAVID WILEY
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